

Meteorological data from ice-free areas in Yukidori Zawa, Langhovde, Kizahashi Hama, Skarvsnes, and Skallen in Sôya Coast, East Antarctica, as the monitoring studies on terrestrial biology

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南極陸域生態系モニタリング観測としての東南極宗谷海岸露岩（ラングホブデ雪鳥沢、スカルブスネスきざはし浜、スカーレン）の気象要素の連続観測

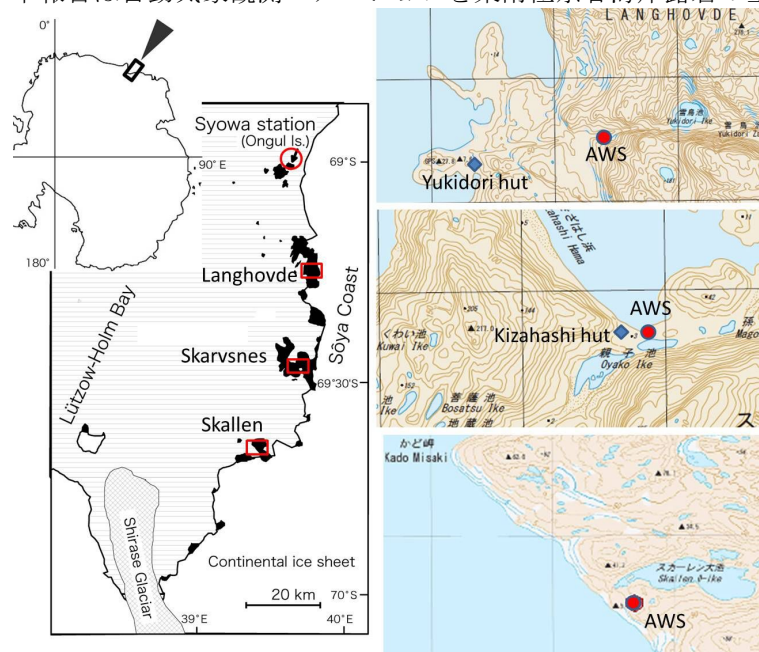
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This report shows meteorological data recorded by automatic weather stations (AWS, hereafter) set at middle stream site in the Yukidori Zawa, Langhovde and south-eastern edge of Kizahashi Hama, Skarvsnes, both locates on the Sôya Coast, East Antarctica, from the 51st to 56th Japanese Antarctic Research Expedition (JARE). This study was a part of NIPR basic research observations entitled “Monitoring of terrestrial ecosystems (AMB06)”, that aimed to record of environmental conditions for terrestrial organisms living on ice-free areas in Syowa Oasis. Meteorological parameters such as air temperature, relative humidity, solar radiation, photosynthetically active radiation (PAR), ultra-violet radiation (UV), wind speed/direction, and air pressure were continuously measured, and recorded automatically at intervals of 10 min, 1 hour, and 1day. By comparing the data obtained from two AWSs with those at Syowa Station (Ongul Islands), we observed a degree of variability in seasonal and annual air temperature and solar radiation. However, throughout the year, these ice-free areas experienced approximately 1–2°C higher temperatures and 50% lower wind speeds compared with Syowa Station. Relative humidity and solar radiation (which may be influenced by topographic shading) recorded by both AWS, were ~10% lower than those recorded at Syowa Station. In addition, the numbers of days above 0°C at both sites was nearly twice that at Syowa Station; we recorded ~200 W/m² of solar radiation and wind speeds of 3–4 m/s. These differences in weather parameters between the Ongul Islands and ice-free areas on the southern Sôya Coast potentially affect the activities of terrestrial biota, and might account for the significant differences in vegetation between the two areas.

本報告は自動気象観測ステーションを東南極宗谷海岸露岩の生物活動域であるラングホブデ雪鳥沢、スカルブス



ネスきざはし浜、スカーレン大池脇に設置し、観測記録したデータを報告するものである。この観測は第 IIIV 期計画の陸域生態系モニタリング観測の一端を担うもので、昭和オアシス露岩域の陸域生物活動環境特性を長期連続観測することを目的としている。気象要素として気温、湿度、気圧、日射、紫外線、光合成有効放射、風向風速を連続観測し、10 分、1 時間、1 日単位の平均値、および最高・最低値を記録し、JARE-Data Report などとして報告してきた (Kudoh et al., 2015a,b,c)。昭和基地での気象記録とこれら露岩域での気象データを比較したところ、酷似した季節・年変動性が認められるものの、露岩域においては平均で 1~2°C ほど気温が高いこと、相対湿度は 10% ほど低いこと、氷点 (0°C) 以上の日平均気温日が 2 倍程度あることが観測された。また年平均日射として 200W/m² で、平均風速は昭和基地の観測記録よりも半分ほど弱い

Figure 1. Ice-free areas on the Soya Coast (left, black areas), and the locations of AWSs(right, red circles).

3-4m/s であることが観測された。これら昭和基地と生物活動が顕著である宗谷海岸露岩域の気象要素の格差は、露岩域がより温かな環境であることを示しており、この違いが陸域生物活動の活発さに影響を与えているものと推察された。

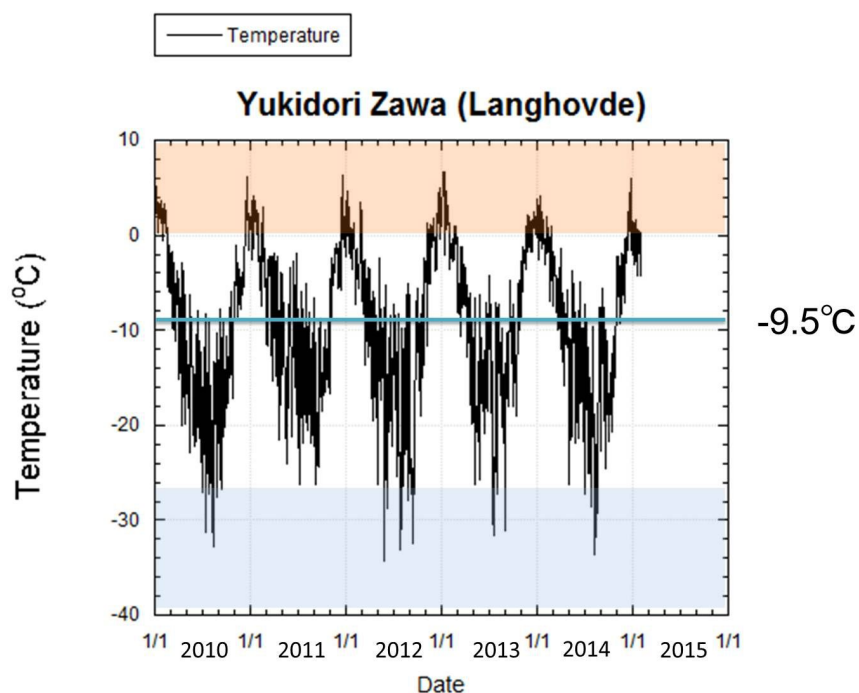


Figure 2. Daily mean temperature at Yukidori Zawa during 2010-2015.

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